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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/632,578	07/31/2003	Chunlin Liang	42P4214DC	5026
8791	7590	06/28/2004	EXAMINER	
BLAKELY SOKOLOFF TAYLOR & ZAFMAN 12400 WILSHIRE BOULEVARD, SEVENTH FLOOR LOS ANGELES, CA 90025			PHAM, THANH V	
			ART UNIT	PAPER NUMBER
			2823	

DATE MAILED: 06/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/632,578

Applicant(s)

LIANG ET AL.

Examiner

Thanh V Pham

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) 5 and 13-21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 6-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 07/31/03.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of the first species of Group I, claims 1-4 and 6-12, in the reply filed on 04/28/04 is acknowledged. The traversal is on the ground(s) that "claims 1-4, 6-12, and 14-21 are generic". This is not found persuasive because the limitation of claim 14 with the "trench which is adjacent to the diffusion region" (of a transistor structure) requires a different class/subclass search.

The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-4, 6 and 8-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Harajiri US 5,348,906.

Re claim 1, the Harajiri reference discloses a method comprising: filling a portion of a trench 8 with a thermally conducting material 10a; patterning a thermally conducting contact 10b to the thermally conducting material 10a, wherein the patterned thermally conducting contact 10b has a top surface and a plurality of exposed side surfaces, fig. 1(C); and after patterning a thermally conducting contact to the thermally conducting material, forming a spacer portion 14 of dielectric material adjacent to at least one of the exposed side portion, fig. 2(C).

Re claim 2, the method further comprises passivating sidewalls of the trench with a dielectric material 9 prior to the step of filling a portion of the trench with a thermally conducting material, fig. 1(C).

Re claims 3-4, the thermally conducting material is an electrically insulating material, polysilicon, col. 5, line 68.

Re claim 6, the thermally conducting material is a first thermally conducting material, the method further comprising, after forming a spacer portion of dielectric material adjacent to at least one of the exposed side portions, depositing a second thermally conducting material 23 over the structure.

Re claim 8, a method comprising: filling a portion of a trench 8 with a first thermally conducting material 10a; patterning a thermally conducting contact 10b to the first thermally conducting material 10a, wherein the patterned thermally conducting contact 10b has a top surface, fig. 1(C); and after patterning a thermally conducting contact to the first thermally conducting material, depositing a second thermally conducting material 14 over the structure, fig. 2(A).

Re claim 9, the method further comprising passivating sidewalls of the trench with a dielectric material 9 prior to the step of filling a portion of the trench with a first thermally conducting material, fig. 1(C).

Re claims 10-12, the first thermally conducting material and the second thermally conducting material are electrically insulating material and are comprised of the same material, polysilicon, col. 5, line 68 and col. 6, line 5.

4. Claims 1, 3, 6-8, 10 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Cronin et al. US 5,496,771.

Re claim 1, the Cronin et al. reference discloses a method comprising: filling a portion of a trench with a thermally conducting material, 24; patterning a thermally conducting contact 44b to the thermally conducting material 24, wherein the patterned thermally conducting contact has a top surface and a plurality of exposed side surfaces, fig. 1f; and after patterning a thermally conducting contact to the thermally conducting material, forming a spacer portion of dielectric material 42d adjacent to at least one of the exposed side portion, fig. 1f.

Re claim 3, the thermally conducting material is an electrically insulating material, col. 6, lines 4-8.

Re claim 6, the thermally conducting material is a first thermally conducting material, the method further comprising, after forming a spacer portion of dielectric material adjacent to at least one of the exposed side portions, depositing a second thermally conducting material 52 over the structure.

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Re claim 7 the first thermally conducting material and the second thermally conducting material are comprised of the same material, SiO₂, col. 6, lines 4-8 and col. 7, line 56.

Re claim 8, the Cronin et al. reference discloses a method comprising: filling a portion of a trench with a first thermally conducting material 24; patterning a thermally conducting contact 44b to the first thermally conducting material, wherein the patterned thermally conducting contact has a top surface; and after patterning a thermally conducting contact to the first thermally conducting material, depositing a second thermally conducting material 52 over the structure.

Re claims 10 and 12, the first thermally conducting material and the second thermally conducting material are electrically insulating material and are comprised of the same material, SiO₂, col. 6, lines 4-8 and col. 7, line 56.

5. Claims 1-4 and 8-10 are rejected under 35 U.S.C. 102(e) as being anticipated by Chen US 6,306,724 B1.

Re claim 1, the Chen reference discloses a method comprising: filling a portion of a trench 18 with a thermally conducting material 28; patterning a thermally conducting contact 32 to the thermally conducting material 28, wherein the patterned thermally conducting contact 32 has a top surface and a plurality of exposed side surfaces, fig. 1G; and after patterning a thermally conducting contact to the thermally conducting material, forming a spacer portion 36 of dielectric material adjacent to at least one of the exposed side portion, fig. 11.

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Re claim 2, the method further comprises passivating sidewalls of the trench with a dielectric material 18 prior to the step of filling a portion of the trench with a thermally conducting material, fig. 1B.

Re claims 3-4, the thermally conducting material 28 is an electrically insulating material, polysilicon, col. 2, lines 41-42.

Re claim 8, the Chen reference discloses a method comprising: filling a portion of a trench 18 with a first thermally conducting material 28; patterning a thermally conducting contact 32 to the first thermally conducting material 28, wherein the patterned thermally conducting contact 32 has a top surface; and after patterning a thermally conducting contact to the first thermally conducting material, depositing a second thermally conducting material 36 over the structure.

Re claim 9, the method further comprises passivating sidewalls of the trench with a dielectric material 18 prior to the step of filling a portion of the trench with a first thermally conducting material.

Re claims 10, the first thermally conducting material and the second thermally conducting material are electrically insulating material, col. 2, lines 42 and 54.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh V. Pham whose telephone number is 572-272-1866. The examiner can normally be reached on M-T (6:30-5:00).


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 571-272-1855. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

WP

TvP

06/14/04


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